

91 Ba, Hf, Ta, Ir, Tl and Pb, wherein the ferromagnetic phase is matched with the grain boundary phase.

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44. A permanent magnet as defined in claim 1, wherein said ferromagnetic phase comprises ferromagnetic grains displaying magnetocrystalline anisotropy by means of crystal fields comprising rare earth elements, and said cations are located in an extending direction of a 4f electron cloud of ions of the rare earth elements of the crystal fields located at an outermost shell of said ferromagnetic grains.

#### REMARKS

Applicants have canceled the non-elected claims without prejudice or disclaimer and have canceled certain of the elected claims without prejudice or disclaimer in order to expedite prosecution of this application. The amendments to claim 1 find support in original claim and at page 43, third line from the bottom. Entry of these amendments is respectfully requested.

Claims 1-4 stand rejected under 35 USC 112, second paragraph, for using the term "matched", on the ground that "the meaning of [the term] in the context of the claims is not clear." Applicants traverse this rejection on the ground that the Examiner is attributing less skill to persons skilled in the art than they actually possessed at the time this application was filed. The application explains in many places what the inventors define as "matched" or "matching" for the purposes of their invention. The specification provides an example at pages 8 and 9, with respect to one of the aspects of the invention, in which the [ferro]magnetic phase and the grain boundary phase are both face-centered cubic structures and thus match each other. The specification also explains how advantageous magnetic properties are achieved when the ferromagnetic and grain boundary phases are crystallographically matched within certain relationships defined on pages 9-10, 15-16, 22 and 28. The concept of matching is explained

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consistently throughout the specification, so persons skilled in the art can readily understand what claims 1-4 embrace. This rejection should be withdrawn.

Claim 2 stands rejected under 35 USC 112, second paragraph, as allegedly being unclear in its use of the term "regularly". This rejection is respectfully traversed on the ground that persons skilled in the metallurgical and crystallographic arts, to whom this application is addressed, know what "regular" means in the context of crystal structures. The Examiner has presented no objective, factual reasons why claim 2 is unclear, so the rejection should be withdrawn.

Claim 3 stands rejected under 35 USC 112, second paragraph, as being unclear in its use of the word "type." Applicants respectfully submit that the Examiner has not provided any reasonable factual basis for his belief that the phrase "crystal type" does not have a meaning that persons skilled in this art would understand in the context of the specification of this application. This application is drafted with reference to the level of knowledge of persons skilled in the metallurgical arts; such persons are familiar with crystallography and its terminology regarding types of crystal structures and thus know what "crystal types" are and would clearly understand the scope of claim 3. For example, crystal types include cubic, tetragonal, rhombohedral etc. Applicants also respectfully note that this Examiner has allowed claims in U.S. Patent Nos. 4,770,723 (claim 3) and 4,792,368 (claim 1) that are directed to subject matter related to this application and use the word "type". This rejection should be withdrawn.

Claims 1-4 stand rejected as either anticipated by or obvious over Ueda, Takeshita, Yamamoto '546 or Yamamoto '875, on the basis that the references disclose "permanent magnets having compositions which are encompassed by the instant claims" and "are made by sintering and cooling at a cooling rate encompassed by applicants' disclosed cooling rate."

Applicants respectfully traverse these rejections on the ground that none of the cited references provides the Examiner any reason to believe factually that persons of ordinary skill in the art would have recognized that the magnets disclosed in the references had any grain



boundary phases that were free from rare earth elements as claimed in amended claim 1. All of the references disclose magnets based on a combination of an R-TM-B ferromagnetic phase and an R-X grain boundary phase, where R is a rare earth element. Regardless of certain similarities between applicants' disclosure and the prior art, the prior art does not teach or suggest this aspect of the claimed invention. Furthermore, the prior art is silent on, and betrays not the slightest appreciation of, the claimed matching between the ferromagnetic phase and the grain boundary phase of magnets made according to this invention.

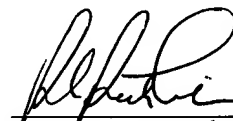
Early action allowing claims 1-4 and 44 in this application is solicited.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment, captioned "**Version marked to show changes made**".

In the event that the transmittal letter is separated from this document and the Patent and Trademark Office determines that an extension and/or other relief is required, applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 251002009000. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Respectfully submitted,

Dated: June 6, 2001



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**VERSION MARKED TO SHOW CHANGES MADE**

Cancel claims 5-43 without prejudice or disclaimer.

Amend claim 1 as follows:

1. (Amended) A permanent magnet [having] comprising a ferromagnetic phase and a grain boundary phase consisting essentially of one or more cations selected from the group consisting of Be, Mg, Al, Si, P, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Sr, Zr, Nb, Mn, Cd, In, Sn, Ba, Hf, Ta, Ir, Tl and Pb, wherein the ferromagnetic phase is matched with the grain boundary phase.

Add new claim 44, as follows:

44. A permanent magnet as defined in claim 1, wherein said ferromagnetic phase comprises ferromagnetic grains displaying magnetocrystalline anisotropy by means of crystal fields comprising rare earth elements, and said cations are located in an extending direction of a 4f electron cloud of ions of the rare earth elements of the crystal fields located at an outermost shell of said ferromagnetic grains.

*a*